

## 4007 Counting Squares.

Nancy is the best babysitter of the block and today she faces her greater challenge: little John and his anxious box of markers. But Nancy has prepared herself for this eventuality with an activity that it will maintain occupied little John. In a paper sheet with squares John will have to put his blue marker in some corner of a square and at the order of “right” (or left, or up, or down) he will have to be draw a segment that unites the present position with next point to its right (or left, or up, or down); the marker will be placed in that last point hoping the following instruction.

The idea is that John follows the instructions, draws a simple polygon and counts the number of squares that are within the figure. Remember that the boundary of a simple polygon does not cross itself.

### Input

In the first line is a integer number  $n$ , that represents the number of tests. In following  $n$  lines there will be a statement containing the instructions: ‘U’ - up, ‘D’ - down, ‘R’ - right, ‘L’ - left.

### Output

For each test it’s necessary to indicate the number of squares that the polygon contains.

### Sample Input

```
2
DLULDDRRRUUULD
UUUULLLLDDDDRRRR
```

### Sample Output

```
case 1: 6
case 2: 16
```